Lead and caries

To the editor—We read with interest the recent report by Watson *et al.* concerning the effect of maternal lead on tooth decay in rat pups[1]. After raising female rat pups exposed to lead in drinking water, the authors measured lead concentrations of various body fluids during pregnancy and lactation. They reported a mean lead concentration in breast milk (500 mcg/dl) which was ten times higher than that in blood (48 mcg/dl), suggesting that lead is concentrated in the mammary glands. The authors then speculated that mammary gland concentration of lead in these rats, as well as decreased parotid function, may explain the increased prevalence of dental caries in humans exposed to lead. We suggest that their extension to human dental caries is not justified.

Entry of lead into human breast milk is uncertain. We reported the case of two women whose blood lead concentrations were 34 mcg/dl and 29 mcg/dl (ref. 2). Because both women were breastfeeding, their breast milk was analyzed by atomic absorption spectrophotometry and found to contain less than 10 parts per billion lead, or 0.010 mcg/ml. If a 5-kg infant drank a typical daily volume of 1 liter of this breast milk, less than 10 mcg of lead would be ingested per day, substantially less than the 5 mcg/kg/day which has been associated with a positive lead balance in humans[3].

CARL R. BAUM[1] &
MICHAEL W. SHANNON[2]
[1]*Division of Emergency Medicine*
Children's Memorial Hospital
Chicago, IL 60614, USA
[2]*Children's Hospital*
Boston, MA 02115, USA

Bowen and Watson reply—Baum and Shannon appear to imply that the source of lead to the pups is part of the actual pathogenesis of dental caries. We have studied the influence of pre- and perinatal lead exposure on susceptibility to dental caries. Clearly lead from milk is just one source of lead exposure in our animals. We speculate that the exposure of developing pups to lead affects salivary gland development and the acid resistance of the tooth enamel, thereby enhancing susceptibility to dental caries. Whether the lead reached the pups' developing teeth and salivary glands through milk or across the placenta is largely irrelevant. Our results are consistent with the sparse epidemiological data. We agree that entry of lead into human breast milk is uncertain; extensive well-controlled clinical studies are required. For example, earlier work has shown that human breast milk may contain up to 35 mcg/dl and this amount is influenced by maternal age and stage of lactation[4]. Moreover, ratios of 1:1, human breast milk:whole blood, continue to be reported[5]. Certainly, generalizations cannot be made from data derived from just two subjects[2].

1. Watson, G.E. *et al.* Influence of maternal lead ingestion on caries in rat pups. *Nature Med.* **3**, 1024–1025 (1997).
2. Baum, C.R. & Shannon, M.W. Lead in breast milk. *Pediatrics.* **97(6)**, 932 (1996).
3. Ziegler, E.E. *et al.* Absorption and retention of lead by infants. *Pediatr. Res.* **12**, 29–34 (1978).
4. Silbergeld, E.K. Lead in bone: Implications for toxicology during pregnancy and lactation. *Env. Health Pers.* **91**, 63–70 (1991).
5. Plockinger, B. *et al.* Lead, mercury and cadmium in newborn infants and their mothers. *Zeitschrift fur Geburtshilfe und Perinatologie.* **197**, 104–107 (1993).

WILLIAM H. BOWEN &
GENE E. WATSON II
[1]*University of Rochester*
Department of Dental Research
601 Elmwood Avenue, Box 611
Rochester, NY 14642-8611, USA

Honest Danes

To the editor—In the November issue you published a timely editorial on scientific misconduct and mentioned that Denmark has a national code of procedures. Our committee on scientific dishonesty was established in 1992 with the approval and cooperation of a broad representation of the medical and scientific communities. Denmark is, however, no longer the only country in our area to have a national committee—Norway has had a similar system for three years and more recently Sweden introduced a national system. Finland has a system with institutional handling of cases, but with a central supervision and central guidelines.

In our experience, cases of severe dishonesty are rare while accusations are much more common and often based on seemingly reasonable grounds. These suspicions originate from a wide variety of presumed deviations from good scientific practice and good leadership practices and as such we have found that it is important that committees on scientific dishonesty function under a broad mandate, allowing them to handle not only accusations of the most severe acts of dishonesty, but also less severe cases. We find that many scientists have confidence in a committee that is permitted to practice on a broad basis and that they even feel a need for it, as indicated by the common referral of problems of a more general nature, such as when scientists think that broadly accepted guidelines and procedures have not been adhered to. This system also allows the committee to develop experience that lends itself to preventive work. The widespread distribution of annual reports and guidelines of the committee may help prevent scientific dishonesty and promote good scientific practice. We also believe that only broad-based regional or national committees will be able to develop the experience and expertise necessary to handle both cases of severe misconduct, and to initiate preventive and educational programs.

A more complete presentation of our views on these matters is described in our annual reports[2] and in our guidelines on procedures for storing and retrieving research data[3]. We are also working on guidelines governing agreements between researchers embarking on collaborative projects; the rights and duties involved in using and storing data; and the rights and duties surrounding publication and authorship.

1. Andersen D, Attrup L, Axelsen N and Riis P. Scientific dishonesty & good scientfic practice. Copenhagen: The Danish Medical Research Council, 1992.
2. The Danish committee on scientific dishonesty. Annual Reports 1993-96. Copenhagen: the Danish Research Councils 1994-97.
3. Guidelines for the presentation of experimental protocols and reports, data documentation and data storage in I. basic health research, and in II. clinical and clinical-epidemiological research. *Danish Medical Bulletin* **44**, 87–89 (1997).

Note: This material can be obtained free of charge from: The Committee on Scientific Dishonesty. The Ministry of Research. Bredgade 43, DK-1260 Copenhagen K.

DANIEL ANDERSEN
Vice-chairman
The Danish Committee on Scientific Dishonesty
Sprogoevej 19, 3. mf.
2000 Frederiksberg, Denmark